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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,019	03/31/2004	Sushil D. Padlyar	042390.P18253	2653

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EXAMINER
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RUTLEDGE, DELLA J

ART UNIT	PAPER NUMBER
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2851

MAIL DATE	DELIVERY MODE
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10/21/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/816,019	<b>Applicant(s)</b> PADLYAR ET AL.	
	<b>Examiner</b> Della J. Rutledge	<b>Art Unit</b> 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-8 and 10-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,10-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Allowability Withdrawn*

1. The indicated allowability of claims 1 - 20 is withdrawn in view of the newly discovered reference(s). Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 5, 7, 8, 10, 13 -17, 21, 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Hansen (US 6,839,125).

Claim 1, 5, 10, 17: Hansen has a light source LA and in Fig. 5 has a first set of poles coupled to the head; and a second set of poles couples to the head, the second set of poles located between the first set of poles and a center of the head, and the first and second set of poles are adjustable to change characteristics of the light source, see Figs. 10a, b, and the light source is used for lithography, see Fig. 1. The lithography apparatus has a light source LA; first lens IL between the light source LA and the mask MA; a second lens PL between the mask MA and the substrate W.

Claims 5, 15: the first set poles are an arc shape

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Claims 7, 23: the first set of poles comprises two poles, see Figure 5

Claim 8, 14, the light is an excimer laser, see column 9, line 7 and used for photolithography,

Claim 13: the reference disclose using a simulation to determine how to adjust the poles, see at least figure 19 and related text

Claims 16, 21: the poles may be adjusted in size and radius, see at least figures 10a, b and related text

4. Claims 1, 5, 7, 8, 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Tyminski (US 2004/0201831).

Claim 1, 10: The reference discloses a photolithographic apparatus (Figs. 1, 11) having a light source 120; first lens 128; mask 104; second lens 116; and substrate 108. A light source 120 comprising first and second set poles shown in Figs.4a, 5a. The reference discloses adjusting the poles to change the characteristics of the light source. In paragraphs [0051 and 0060], the reference discloses changing the size and location of the poles and varying the shape of the poles, respectively.

Claim 5: the reference discloses changing the shape of the poles in paragraph [0060]

Claim 7: the first set of poles comprises two poles, see figures 4a and 5a

Claim 8: the light source is an excimer laser, see paragraph [0068]

5. Claims 1, 3, 5 - 8, 10, 17, 26, 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Mulkens et al. (US 6,452,662).

Claims 1, 10, 17, 29: The reference discloses a photolithographic apparatus and light source. The light source having a first and second set of poles, see fig. 5b. The poles

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can be adjusted to change the characteristics of the light source by varying the size and location of the poles. The photolithographic apparatus having a source, a first lens (see illumination systems in figure 4); a mask M, second lens PL and substrate W.

Claim 3: figure 26b shows a second set of poles comprising four poles equidistant from each other

Claim 5: the poles are arc shaped, see figures 5b and 13

Claim 6: in figure 26b, the first set of poles comprises four poles

Claim 7: the first set of poles comprises two poles in figures 5b, 13

Claim 8: the light source is an excimer laser, see column 7, line 25, 26

Claim 26: the method comprising generating a light using a light source including a first set of poles and a second set of poles closer to a center of the light source than the first set of poles; and projecting the light to form a pattern on the layer of photoresist. See figure 25 and 26.

6. Claims 1, 5, 7, 8, 10, 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Shiozawa (US 2004/0022068).

The reference meets the claims. See Figs. 6, 7, 18A, B and text, such as the abstract, 0046, 0093, 0101.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 11 - 16, 18 – 25, 27, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mulkens et al. (US 6,452,662) alone or in view of Socha (US 2004/0265707) .

Although Mulkens et al. does not specifically disclose the method claimed, the steps disclosed would have been the steps used to design the pole arrangements used based on the design of the pattern. Using poles of different shapes, and arrangement with a particular number of poles would be determined by the structure of the pattern to be resolved. Phase shift mask commonly used to resolve complex patterns and using an attenuated or embedded phase shift mask would be choice of which one of ordinary skill in the art would be knowledgeable. Socha, in figures 10A, B and 11A, B, has hexapole arrangements having sets of poles having different shapes.

10. The same arguments can be used with the other references cited above, with reference to Hansen (US 6,839,125), Shiozawa (US 2004/0022068) and Tyminski (US

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2004/0201831) and these claims would be rejected over these references, but to simplify the Office Action the details of the rejections are not being given.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kohna (US 2005/0280796) in figures 11 and 13 discloses an octapole illumination arrangement.

### ***Response Data***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Della J. Rutledge whose telephone number is (571) 272-2127. The examiner can normally be reached on Mon - Thurs, 6:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Della J. Rutledge/  
Primary Examiner  
Art Unit 2851

dr  
10/18/2008